



### Alpha Therm GmbH: Ihr Offizieller Vertriebskanal für SETsafe/SETfuse

Die Alpha Therm GmbH mit Sitz in Plankstadt, Deutschland, ist stolz darauf, der offizielle Vertriebskanal für SETsafe/SETfuse in Deutschland, Europa und weltweit zu sein. Unsere langjährige Partnerschaft mit SETsafe/SETfuse basiert auf einem erfolgreichen und vertrauensvollen Geschäftsmodell.

Wir repräsentieren SETsafe/SETfuse auf internationalen Messen wie der Electronica, InterSolar, ees und vielen weiteren. Von kleinen Standardsicherungen bis hin zu komplexen, kundenspezifischen Automotive-Projekten – wir haben alles erfolgreich umgesetzt. Mit unserer umfassenden Lagerhaltung in Deutschland gewährleisten wir schnelle und zuverlässige Lieferungen.

Kontaktieren Sie uns! Unser kompetentes Team berät Sie ausführlich und findet die optimale Lösung für Ihre Anforderungen. Vertrauen Sie auf Alpha Therm GmbH und SETsafe/SETfuse – Ihre Partner für innovative Sicherheitslösungen.

## Kontakt:

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## Alpha Therm GmbH: Your Official Distribution Channel for SETsafe/SETfuse

Alpha Therm GmbH, based in Plankstadt, Germany, is proud to be the official distribution channel for SETsafe/SETfuse in Germany, Europe, and worldwide. Our long-standing partnership with SETsafe/SETfuse is built on a successful and trustworthy business model.

We represent SETsafe/SETfuse at international trade fairs such as Electronica, InterSolar, ees, and many more. From small standard fuses to complex, customized automotive projects, we have successfully handled it all. With our extensive warehousing in Germany, we ensure fast and reliable deliveries.

Contact us today! Our competent team will provide you with detailed advice and find the optimal solution for your requirements. Trust Alpha Therm GmbH and SETsafe/SETfuse – your partners for innovative safety solutions.

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**SF Series** 



### **Description**

Alloy Thermal-Link / Alloy Thermal Cutoff (ATCO) is defined as a non-resettable protective device functioning one time only. It is widely used in electrical equipment. ATCO is mainly consist of fusible alloy, flux resin, case, sealant and lead wires. Normally, fusible alloy is jointed to the two lead wires. Under abnormal conditions, when the temp. reaches to the fusing temp. of ATCO, the fusible alloy melts and quickly retracts to the two lead wire ends with the aid of the flux resin and disconnects the circuit completely.

SETsafe | SETfuse Alloy Thermal-Link (ATCO) SF series Rated Functioning Temp. from 115 °C to 139 °C, Rated Current: 3 A, 5A, safety certification Includes UL, cUL, and complies with RoHS and REACH.

#### **Features**

- Non-Resettable
- High Accuracy of Functioning
- RoHS & REACH Compliant

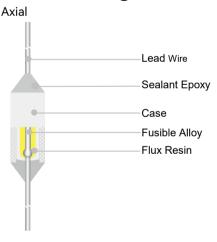
### **Applications**

- Lamps
- Switched-Mode Power Supplies
- Home Electrical Appliances
- Transformers
- Motors
- **Batteries**

#### Customization

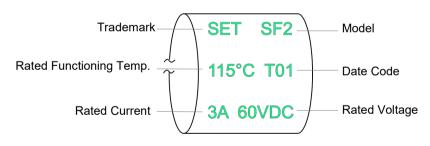
- Other Temp.
- The Length of Lead Wires
- Taping Packing Available
- Lead Wires can be Insulated
- Tinned Copper Wires or CP Wires
- **Leads Forming Types**

## **Structure Diagrams**



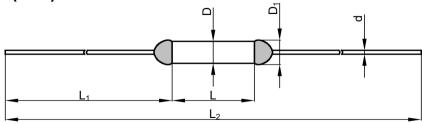
### Marking

Axial (Color for reference only)



Remark: The first letter of the Date Code Year/quarter A stands for 2000, B stands for 2001, 01 stands for the first quarter, 02 stands for the second quarter, and so on.

## **Dimensions (mm)**



L	L <sub>1</sub>	L <sub>2</sub>	D	D <sub>1</sub>	d
6.0 ± 0.5	35.0 ± 2.0	76.0 ± 3.0	1.5 ± 0.5	≤ 2.0	0.58 ± 0.05



**SF Series** 

## **Specifications**

Temp. (T <sub>f</sub> ) °C		Model	Fusing Temp.	(°C)	T <sub>m</sub>	(A)	(V)	<b>FN</b> ®	c <b>N</b> ®	RoHS REACH
	139	SF13	135 ± 2	85	200	5	DC 60	•	•	•
Functioning	133	SF8	130 ± 2	110	200	3	DC 60	•	•	•
	130	SF4	125 ± 2	95	200	3	DC 60	•	•	•
Rated	115	SF2	111 ± 2	90	200	3	DC 60	•	•	•

#### Note:

<sup>1: &</sup>quot;  $\bullet$  "Means certificated, "  $\circ$  "Means non-certificated, RoHS & REACH Compliant .

<sup>2: &</sup>quot; \* "Customizable DC voltage.



**SF Series** 

## **Agency Information**

Institution	Standards	The File No. and certification No. obtained by SETsafe   SETfuse
<b>N</b> ®	UL 60691	E214712
c <b>F1</b> ®	CAN-CSA-E60691	E214712

### Soldering

Hand-Soldering

- 1. Soldering should be carried out according to Table T-1.
- 2. The thermal element of ATCO is fusible alloy with low melting point, which is jointed with ATCO lead wires. Improper soldering operation (too high soldering temp., too long soldering time, too short lead wire etc.) may transfer more heat to the thermal element and ATCO may open in advance.
- 3. When soldering conditions are more severe than those listed in Table T-1, a heat sink fixture should be used between soldering point and ATCO body.
- 4. When soldering, please do not pull / push or twist ATCO body or lead wires.
- 5. After soldering, let it naturally cool for longer than 20 seconds. During cooling, never move the ATCO body or lead wires.

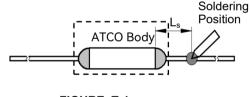


FIGURE T-1

#### TABLE T-1 Hand-Soldering Time

Rated Functioning Temp.		Max. Allow	able Sol	dering Tir	ne for Differer	nt Lead W	/ire Lengt	h (Fig.T-1)		Max. Soldering Temp.
Temp. ( <i>T</i> <sub>f</sub> )	L <sub>s</sub> Length	Time	•	L <sub>s</sub> Length	Time		L <sub>s</sub> Length	Time	е	•
	Lengin	Tinned Copper Wire	CP Wire	Lengin	Tinned Copper Wire	CP Wire	Lengin	Tinned Copper Wire	CP Wire	
(°C)	(mm)	(s)	(s)	(mm)	(s)	(s)	(mm)	(s)	(s)	(°C)
115	10	1ª	4	20	2	5	30	3	6	
116 to 135	10	1 <sup>a</sup>	4	20	3	6	30	5	8	400
136 to 139	10	3	6	20	5	8	30	5	8	

#### Note:

a: Auxiliary Heat Sink Fixture is Required to Avoid ATCO Cutting off Unexpectedly.



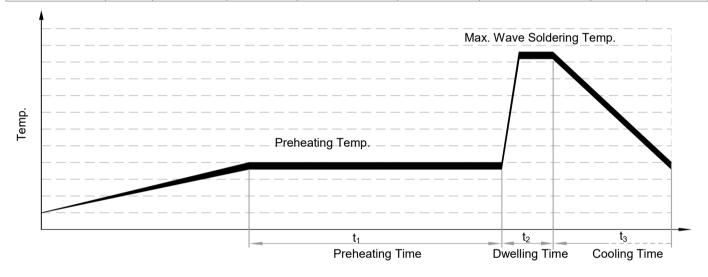
**SF Series** 

Wave Soldering

The wave soldering parameters as Table T-2, for reference only, when ATCO is for practice use, you need to do some validation experiments. For example, using X-RAY to see the fusible alloy of ATCO whether damage after wave soldering.

TABLE T-2 Wave Soldering Parameters Setting

Rated Functioning Temp.	Wh	_		ng Temp. e is Different	Preheating Time (t₁)	Max. Wave Soldering	Dwelling Time (t <sub>2</sub> )	Cooling Time (t <sub>3</sub> )
(T <sub>f</sub> )	L <sub>s</sub> Length	Preheating Temp.	L <sub>s</sub> Length	Preheating Temp.		Temp.		
(°C)	(mm)	(°C)	(mm)	(°C)	(s)	(°C)	(s)	(s)
115 to 130				Recommend	Hand-Soldering	9		
131 to 139	20	80	30	90	< 60	≤ 260	≤ 3	≤ 10

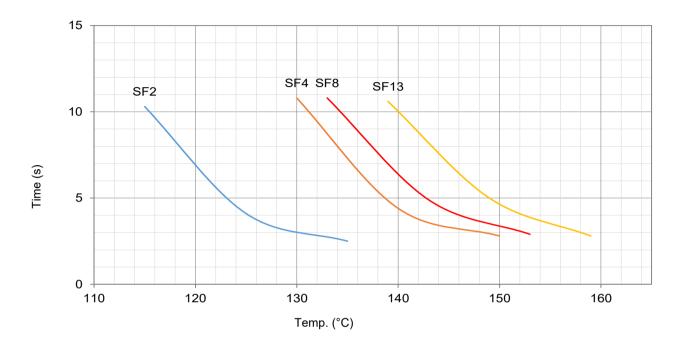




**SF Series** 

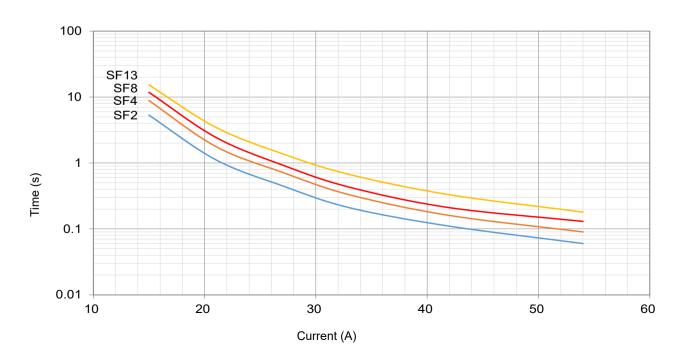
## **Product Temp.-Time Curve (Reference)**

The Temp.-Time Curve of Thermal-Link in different temp. oil bath.



## **Product Current-Time Curve (Reference)**

The Current-Time Curve shows functioning time at multi-times rated current at room temperature 25 ± 2 °C.



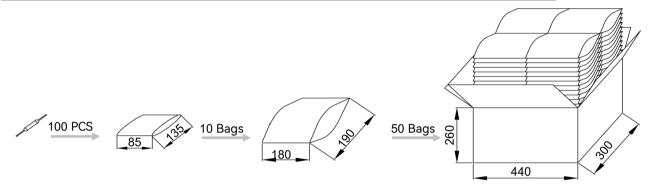


**SF Series** 

## **Packaging Information**

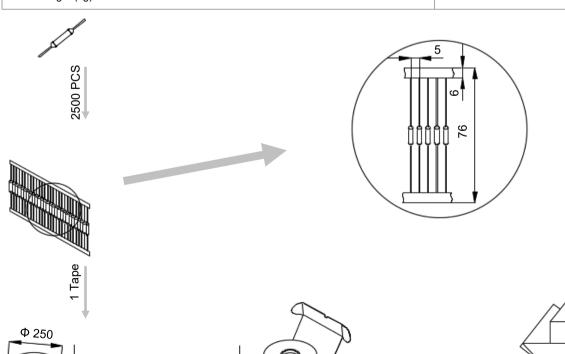
#### Bulk

Item	PE Bag	PE Bag	Carton
Dimensions (mm)	135 × 85	190 × 180	440 × 300 × 260
Quantity (PCS)	100	1000	50000
Gross Weight (kg)			11.0 ± 10%



#### Taping

Item	Scroll	Box	Carton
Dimensions (mm)	Ф 250 × 94	258 × 258 × 98	480 × 300 × 260
Quantity (PCS)	2500	2500	10000
Gross Weight (kg)			12.0 ± 10%



1 Scroll

440

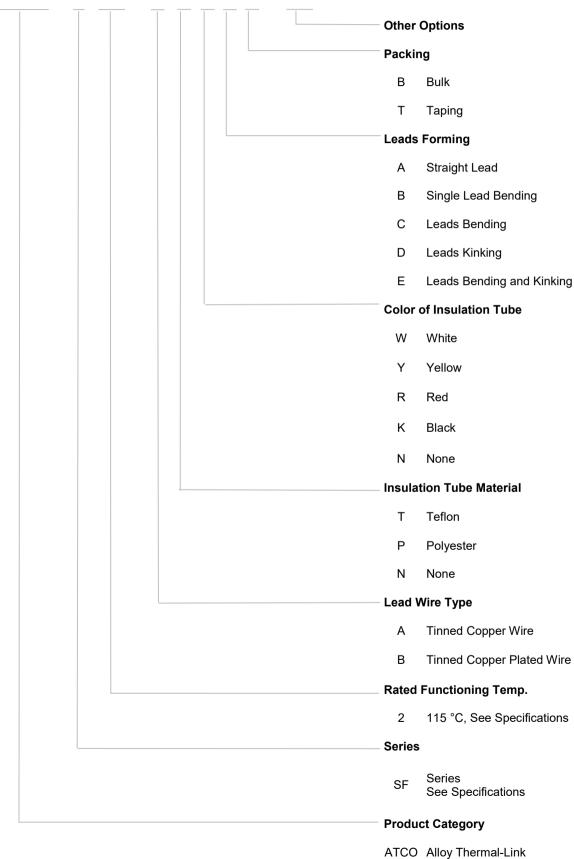
4 Boxes



**SF Series** 

## **Part Numbering System**

ATCO - SF 2 - A N N A B - 001





SF Series

## **Glossary**

Item	Description
тсо	Thermal-Link A non-resettable device incorporating a THERMAL ELEMENT which will open a circuit once only when exposed for a sufficient length of time to a temperature in excess of that for which it has been designed.  — (GB 9816.
ATCO	Alloy Thermal-Link Alloy Type Thermal-Link, Alloy is the thermal element. — (GB 9816.
T <sub>f</sub>	Rated Functioning Temp.  The temperature of the Alloy Thermal-Link which causes it to change the state of conductivity with a detection current up to 10 mA as the only load.
11	— (GB 9816. Tolerance: $T_{\rm f}$ °C (GB 9816.1, EN 60691, K60691). Tolerance: $T_{\rm f} \pm 7$ °C (J60691).
Fusing Temp.	Fusing Temp.  The temperature of the Alloy Thermal-Link which causes it to change its state of conductivity is measured with silicone oil bath in which the temperature is increased at the rate of 0.5 °C to 1 °C / minute, with a detection current up to 10 mA as the only load.  — (GB 9816.
T <sub>h</sub>	Holding Temp.  The Maximum temperature at which a Alloy Thermal-Link will not change its state of conductivity when conducting rated current for 168 hours.  — (GB 9816.
T <sub>m</sub>	Maximum Temp. Limit  The temperature of the Alloy Thermal-Link stated by the manufacturer, up to which the mechanical and electrical propertie of the Alloy Thermal-Link having changed its state of conductivity, will not be impaired for a given time.  — (GB 9816.
I <sub>r</sub>	Rated Current The current used to classify a Alloy Thermal-Link, which is the Maximum current that Alloy Thermal-Link allows to carry ar is able to cut off the circuit safely.  — (GB 9816.
<b>U</b> r	Rated Voltage  The voltage used to classify a Alloy Thermal-Link, which is the Maximum voltage that Alloy Thermal-Link allows to carry are is able to cut off the circuit safely.  — (GB 9816.
<i>I</i> n	Nominal Discharge Current  Being able to withstand 15 peak currents of waveform 8/20 µs to test the product's durability of withstanding pulse current.  — (UL 144)
I <sub>max</sub>	Max. Discharge Current  Being able to withstand 1 peak current of waveform 8/20 µs to test max. pulse current that the product can withstand.  — (UL 144)



**SF Series** 



### **Usage**

- 1. When atmosphere pressure is from 80 kPa to 106 kPa, the related altitude shall be from 2000 meters to 500 meters.
- 2. Operating voltage less than rated voltage of ATCO, operating current less than rated current of ATCO.
- 3. Do not touch the ATCO body or lead wires directly when power is on, to avoid burn or electric shock.

### Replace

ATCO is a non-repairable product. For safety sake, it shall be replaced by an equivalent ATCO from the same manufacturer, and mounted in the same way.

## **Storage**

Do not store the ATCO at the high temp., high humidity or corrosive gas environment, avoid influencing the solder-ability of the lead wires, the product shall be used up within 1 year after receiving the goods.

### Installation

Make Sure the Temp. of Installation Position.

- 1. It is recommended that a dummy ATCO with inbuilt thermo-couple shall be used to determine the proper temp.
- 2. The terminal product should be tested to ensure that potential abnormal conditions do not cause ambient temp. to exceed the  $T_{\rm m}$  of the ATCO.
- 3. Mount the ATCO at the location where temp. rises evenly.

Installation position of mechanical performance requirements.

- 1. Do not locate the ATCO in a place where severe vibration always occurs.
- 2. Ensure that the lead wire is long enough, and avoid actions such as press, tensile or twist.
- 3. The seal or body of ATCO must not be damaged, burned or over heated.



SF Series

#### **Mechanical Connection**

#### Riveting

- 1. Choose small resistivity riveting material and be riveted.
- 2. A flexible lead or lead with low resistance should be used to rivet the ATCO.
- Contact resistance should be minimal, large contact resistance will lead to higher temp., ATCO Functioning in advance.

#### Crimping

- 1. Choose small resistivity crimping material and be crimped.
- 2. A flexible lead or lead with low resistance should be used to rivet the ATCO.
- 3. Contact resistance should be minimal, large contact resistance will lead to higher Temp., ATCO Functioning in advance.

### **Lead Wire Forming**

- 1. If lead wire has to be bent, please pay attention to the distance between body and bending point. Refer to Table T-3.
- 2. When bending leads, please use pincher or similar tools to fix the product as shown in Fig.T-2, to avoid damaging the product.
- 3. During forming and mounting, lead wire should not be cut, nicked, bent sharply, to avoid breaking the product.
- 4. Tangential forces on the leads must be avoided (i.e. pushing or pulling on the leads at angle to ATCO body) as such forces may damage the seal of ATCO.

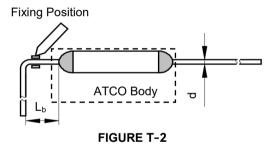


TABLE T-3 Distance between Body and Bending Point

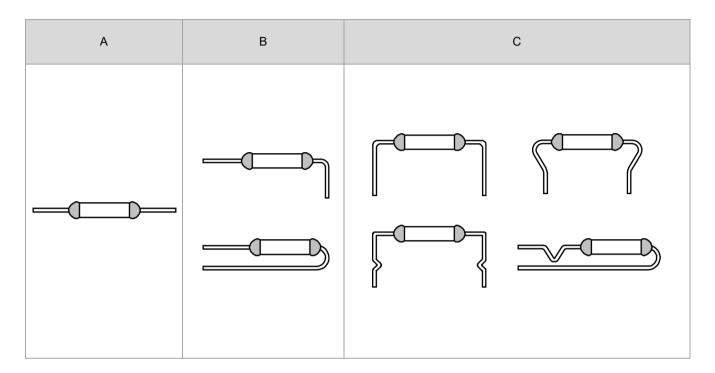
	d	(mm)	< 1.0	1.0 - 1.2	> 1.2
Circular lead	L <sub>b</sub>	(mm)	≥ 3	≥5	≥ 10





**SF Series** 

**Leads Forming Types**The below leads forming is for reference, more leads forming can be customized.



SF Series

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230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	SKL230	SE230	0	
221	V31	H31	B31	C31	U31	R31	0	K31	X31	0	0	0	0	0	0	0	KG31	XG31	SK221	0	0	TK221	
205	V32	H32	B32	C32	U32	R32	0	K32	X32	0	0	0	0	0	0	0	KG32	XG32	SK205	0	0	TK205	
200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	SKL200	SE200	0	
187	0	0	0	0	0	0	0	K17	X17	Y17	0	0	0	0	0	0	0	0	0	0	0	0	
160	V16	H16	B16	C16	U16	R16	F16	K16	X16	Y16	0	0	0	0	0	0	KG16	XG16	SK160	0	0	TK160	
150	V7	H7	В7	C7	U7	R7	F7	K7	X7	Y7	S150	T150	0	0	N150	G150	KG7	XG7	SK150	0	SE150	TK150	
145	V6	H6	В6	C6	U6	R6	F6	K6	X6	Y6	0	0	0	0	0	0	KG6	XG6	SK145	0	SE145	TK145	
139	V13	H13	B13	C13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
136	V9	H9	В9	C9	0	0		K9	X9	Y9	S136	T136	P136	Q136	N136	G136	KG9	XG9	0	0	0	0	
135	V5	H5	B5	C5	U5	R5	0	K5	X5	0	0	0	0	0	0	0	KG5	XG5	SK135	0	SE135	TK135	Model
133	V8	H8	В8	C8	0	0	F8	K8	X8	Y8	0	0	0	0	0	0	KG8	XG8	0	0	0	0	od
130	V4	H4	B4	C4	U4	R4	F4	K4	X4	Y4	0	0	0	0	N130	G130	KG4	XG4	SK130	0	0	TK130	<u>e</u>
125	V3	H3	В3	C3	U3	R3	F3	K3	X3	Y3	S125	T125	0	0	N125	G125	KG3	XG3	SK125	0	SE125	TK125	
123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
115	V2	H2	B2	C2	U2	R2	F2	K2	X2	Y2	S115	T115	P115	Q115	N115	G115	KG2	XG2	SK115	0	SE115	TK115	
105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
102	V1	H1	B1	C1	U1	R1	F1	K1	X1	Y1	S102	T102	0	0	N102	G102	KG1	XG1	SK102	0	SE102	TK102	
97	V21	H21	B21	C21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
86	V18	H18	B18	C18	U18	R18	F18	K18	X18	Y18	0	0	0	0	0	0	KG18	XG18	0	0	0	0	
76(	) V0	H0	В0	C0	U0	R0	F0	K0	X0	Y0	0	0	0	0	0	0	KG0	XG0	0	0	0	0	
A) current	1	2	3	5	10	15	1	2	3	5	10	15 16	20	25	30	40	2	3	10	10	10	15 16	
AC) oltage													250										
luct ture	ı	<b>-</b> >⊱	Axial	Shape		<b>.</b>					Race	)      lial Shap	e					Re	adial Shap	ne (Screw H	Hole)		
	221 205 200 187 160 150 145 139 136 135 133 120 125 123 120 115 102 97 95 86 76(	221 V31 205 V32 200 C187 C160 187 C160 V76 150 V7 145 V6 139 V13 136 V9 135 V5 133 V8 130 V4 125 V3 123 C105 C102 V1 97 V21 95 C102 V1	221 V31 H31 205 V32 H32 200	221	221   V31   H31   B31   C31   V32   H32   B32   C32   C33   C33	221   V31   H31   B31   C31   U31   V32   H32   B32   C32   U32   U34   U35   U35	221   V31   H31   B31   C31   U31   R31   V32   H32   B32   C32   U32   R32   C33   U37   R7   R7   R7   R7   R7   R7   R7	221   V31   H31   B31   C31   U31   R31   O 205   V32   H32   B32   C32   U32   R32   O 187   O O O O O 187   O O O O O O 187   O O O O O O O 187   O O O O O O O 187   O O O O O O O 188   O O O O O O O O 189   O O O O O O O O 187   O O O O O O O O 187   O O O O O O O O O 187   O O O O O O O O O O 187   O O O O O O O O O O O 187   O O O O O O O O O O O O 188   O O O O O O O O O O O O O O O O 187   O O O O O O O O O O O O O O O O O O	V31	221	221	221	221	221	221	221	221	221	221	221   V31   H31   B31   C31   U31   R31   O   K31   X31   O   O   O   O   O   O   O   KG31   XG31   XG32   XG32	221	221	221   V31   H31   B31   C31   U31   R31   C   K31   X31   C   K32   X32   C   C   C   C   C   C   C   C   C

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	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Г
	221	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	205	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
()	187	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<u> </u>	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Ę	150	0	0	KM7	XM7	Y7	YM7	SM150	TM150	0	KM7	XM7	0	0	HU7	HR7	0	0	HC7	0	HL7	HW7	Г
ب	145	SY145	TY145	0	0	0	0	0	0	0	0	0	0	0	HU6	HR6	HS145	HP145	HC6	HN145	HL6	HW6	
u D	139	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<u>ම</u>	136	0	0	0	0	Y9	YM9	SM136	TM136	Q136	0	0	P136	Q136	0	0	HS136	HP136	0	HN136	0	0	L
<sub></sub>	135	0	0	KM5	XM5	0	0	0	0	0	KM5	XM5	0	0	HU5	HR5	0	0	HC5	0	HL5	HW5	
Rated Functioning Temp. ( $T_{ m c}$ ) $^{\circ}$ C	133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	130	SY130	TY130	KM4	XM4	Y4	YM4	0	0	0	KM4	XM4	0	0	HU4	HR4	0	0		0	HL4	HW4	
<del>;</del>	125	SY125	TY125	0	0	0	0	0	0		KM3	XM3	P125	Q125	HU3	HR3	HS125	HP125	HC3	HN125	HL3	HW3	П
5	123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Œ	120	SY120	TY120	0	0	0	0	0	0		0	0	0		0	0	0	0	0		0	0	П
ed	115	SY115	TY115	0	0	0	0	SM115	TM115	Q115	0	0	P115	Q115	HU2	HR2	0	0	HC2	0	HL2	HW2	L
at	105	SY105	TY105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	П
r	102	0	0	0	0	0	0	SM102	TM102	0	0	0	P102	Q102	HU1	HR1	0	0	HC1	0	HL1	HW1	1
	97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	П
	95	SY95	TY95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	86	0	0	0	0	0	0	0	0	0	0	0	0	0	HU18	HR18	0	0	HC18	0	HL18	HW18	П
	76	) 。	0	0	0	0	0	0	0	0	0	0	0	0	HU0	HR0	0	0	HC0	0	HL0	HW0	
/r (A		10	15	2	3	5	5	10	15 16	25	2	3	20	25	10	15	5	10	5	15	10	15	Γ
U <sub>r</sub> (VA	AC)	2	50				300				32	20	40	00		50	00		69	90	8	00	1
Prodi Struct			drical						adial Sha							Shape	Axial		Axial	Axial		Shape	

Prod Struc	duct						L						) <u> </u>										
Rated C	Current /DC)	1	2	3  50	5	7	1	2	2.5	3	3	5	4	5 6	6  0	8	8.5	9	10	10	15	15	
<b>/</b> r (.	76(	) V0	H0	В0	C0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	U0	R0	0	
	86	V18	H18	B18	C18	0	0	0	V18	0	0	0	0	0	C18	0	0	0	0	U18	R18	0	
	95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	97	V21	H21	B21	C21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
œ	102	V1	H1	B1	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	U1	R1	0	
ate	105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	ĺ
eq	115	V2	H2	B2	0	C2	0	0	0	0	SF2	0	V2	0	0	C2	0	0	0	U2	R2	0	١
Rated Functioning Temp. (T, ) °C	120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
nc	123	V3	0	B3	0	C3	0	H3	0	0	0	0	0	0	0	0	0	0	0	U3	R3	0	
tio	130 125	V4	H4	B4	0	C4	0	0	0	0	SF4	0	V4	0	0	0	0	0	0	U4	R4	0	ı
n	133	V8	H8	B8	0	C8	0	0	0	0	SF8	0	V8	0	0	0	0	0	0	0	0	0	
ō	135	V5	H5	B5	0	C5	0	0	0	0	0	0	0	0	0	0	0	0	0	U5	R5	0	ı
<u>T</u>	136	V9	H9	B9	0	C9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	l
du	139	V13	H13	B13	0	C13	0	0	0	0	0	SF13	V13	0	0	0	C13	M13	0	0	0	CR13	L
<u>.</u>	145	V6	H6	B6	0	C6	0	0	0	0	0	0	0	0	0	0	0	0	C6	U6	R6	0	l
	150	V7	H7	В7	0	C7	0	0	0	0	0	0	0	0	0	0	0	0	0	U7	R7	0	l
ပ္	160	0	0	0	0	0	V16	H16	0	B16	0	0	0	C16	0	0	0	0	0	U16	R16	0	l
	187		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	ı
	205 200	0	0	0	0	0	V32	H32	0	B32	0	0	0	C32	0	0	0	0	0	U32	R32	0	l
	221	0	0	0	0	0	V31	H31	0	B31	0	0	0	C31	0	0	0	0	0	U31	R31	0	ı
	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	L

	4																	/	1
Rated Functioning Temp. ( $T_{ m r}$ ) $^{\circ}$ C	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	221	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	205	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	200	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	
	187	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	150	0	0	0	0	0	0	S150	T150	0	0	SD150	TD150	PD150	QD150	HS150	HP150	HN150	
	145	0	0	0	0	F6	X6	0	0	0	0	0	0	0	0	0	0	0	
	139	0	0	0	0	F13	0	0	0	0	0	0	0	0	0	0	0	0	
	136	0	0	0	0	0	X9	S136	T136	P136	Q136	SD136	TD136	PD136	QD136	HS136	HP136	HN136	
	135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Model
	133	0	0	0	0	F8	0	0	0	0	0	0	0	0	0	0	0	0	
	130	0	0	0	0	F4	0	0	0	0	0	SD130	TD130	PD130	QD130	0	0	0	0
	125	KG3	XG3	K3	Х3	0	0	S125	T125	P125	Q125	SD125	TD125	PD125	QD125	HS125	HP125	HN125	
	123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	115	KG2	XG2	K2	X2	F2	0	S115	T115	P115	Q115	SD115	TD115	PD115	QD115	0	0	0	
	105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	102	KG1	XG1	K1	X1	F1	0	S102	T102	P102	Q102	SD102	TD102	PD102	QD102	0	0	0	
	97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	86	KG18	XG18	K18	X18	F18	0	0	0	0	0	0	0	0	0	0	0	0	
	76(	) 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$\rightarrow$
r ( Rated C	A) Current	2	3	2	3	3	4	10	15 16	20	25	10	15 16	20	25	5	10	15	
U <sub>r</sub> (V Rated V	<b>U</b> <sub>r</sub> (VDC) Rated Voltage		60						100			120 125				200			
Product Structure			Radial Shape (Screw Hole)												Axial Shape (Flat Electrode)				